

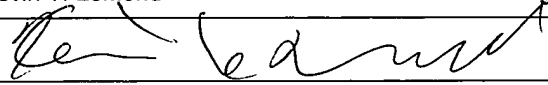
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PTO/SB/21 (08-03)


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PATENT & TRADEMARK OFFICE

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|---|--|------------------------|------------------------|
| TRANSMITTAL FORM (to be used for all correspondence after initial filing) | | Application Number | 09/536,932 |
| | | Filing Date | March 27, 2000 |
| | | First Named Inventor | Pettipiece, Kenneth J. |
| | | Art Unit | 2877 |
| | | Examiner Name | H. Lee |
| Total Number of Pages in This Submission | | Attorney Docket Number | 002558-060520US |

| ENCLOSURES (Check all that apply) | | |
|---|--|---|
| <input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) | <input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Return Postcard |
| Remarks | | The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430. |

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|--|---|
| Firm or Individual | Townsend and Townsend and Crew LLP Kevin T. LeMond Reg. No. 35,933 |
| Signature |  |
| Date | 10/6/03 |

| CERTIFICATE OF TRANSMISSION/MAILING | | | |
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| Typed or printed name | Lata Olivier | | |
| Signature |  | Date | 10/6/03 |

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 1280

Complete if Known

| | |
|----------------------|------------------------|
| Application Number | 09/536,932 |
| Filing Date | March 27, 2000 |
| First Named Inventor | Pettipiece, Kenneth J. |
| Examiner Name | H. Lee |
| Art Unit | 2877 |
| Attorney Docket No. | 002558-060520US |

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:
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☒ Charge any additional fee(s) or any underpayment of fee(s)

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Small Entity

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description | Fee Paid |
|----------|----------|----------|----------|------------------------|----------|
| 1001 | 770 | 2001 | 385 | Utility filing fee | |
| 1002 | 340 | 2002 | 170 | Design filing fee | |
| 1003 | 530 | 2003 | 265 | Plant filing fee | |
| 1004 | 770 | 2004 | 385 | Reissue filing fee | |
| 1005 | 160 | 2005 | 80 | Provisional filing fee | |

SUBTOTAL (1)

(\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

| Total Claims | Extra Claims | Fee from below | Fee Paid |
|--------------------|--------------|----------------|----------|
| Independent Claims | ** | | |
| Multiple Dependent | | | |

Large Entity Small Entity

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description |
|----------|----------|----------|----------|--|
| 1202 | 18 | 2202 | 9 | Claims in excess of 20 |
| 1201 | 86 | 2201 | 43 | Independent claims in excess of 3 |
| 1203 | 290 | 2203 | 145 | Multiple dependent claim, if not paid |
| 1204 | 86 | 2204 | 43 | ** Reissue independent claims over original patent |
| 1205 | 18 | 2205 | 9 | ** Reissue claims in excess of 20 and over original patent |

SUBTOTAL (2)

(\$)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

| Large Fee Code | Large Fee (\$) | Small Fee Code | Small Fee (\$) | Fee Description | Fee Paid |
|----------------|----------------|----------------|----------------|--|----------|
| 1051 | 130 | 2051 | 65 | Surcharge - late filing fee or oath | |
| 1052 | 50 | 2052 | 25 | Surcharge - late provisional filing fee or cover sheet | |
| 1053 | 130 | 1053 | 130 | Non-English specification | |
| 1812 | 2,520 | 1812 | 2,520 | For filing a request for reexamination | |
| 1804 | 920* | 1804 | 920* | Requesting publication of SIR prior to Examiner action | |
| 1805 | 1,840* | 1805 | 1,840* | Requesting publication of SIR after Examiner action | |
| 1251 | 110 | 2251 | 55 | Extension for reply within first month | |
| 1252 | 420 | 2252 | 210 | Extension for reply within second month | |
| 1253 | 950 | 2253 | 475 | Extension for reply within third month | 950 |
| 1254 | 1,480 | 2254 | 740 | Extension for reply within fourth month | |
| 1255 | 2,010 | 2255 | 1,005 | Extension for reply within fifth month | |
| 1401 | 330 | 2401 | 165 | Notice of Appeal | |
| 1402 | 330 | 2402 | 165 | Filing a brief in support of an appeal | 330 |
| 1403 | 290 | 2403 | 145 | Request for oral hearing | |
| 1451 | 1,510 | 1451 | 1,510 | Petition to institute a public use proceeding | |
| 1452 | 110 | 2452 | 55 | Petition to revive - unavoidable | |
| 1453 | 1,330 | 2453 | 665 | Petition to revive - unintentional | |
| 1501 | 1,330 | 2501 | 665 | Utility issue fee (or reissue) | |
| 1502 | 480 | 2502 | 240 | Design issue fee | |
| 1503 | 640 | 2503 | 320 | Plant issue fee | |
| 1460 | 130 | 1460 | 130 | Petitions to the Commissioner | |
| 1807 | 50 | 1807 | 50 | Petitions related to provisional applications | |
| 1806 | 180 | 1806 | 180 | Submission of Information Disclosure Stmt | |
| 8021 | 40 | 8021 | 40 | Recording each patent assignment per property (times number of properties) | |
| 1809 | 770 | 2809 | 385 | Filing a submission after final rejection (37 CFR § 1.129(a)) | |
| 1810 | 770 | 2810 | 385 | For each additional invention to be examined (37 CFR § 1.129(b)) | |
| 1801 | 770 | 2801 | 385 | Request for Continued Examination (RCE) | |
| 1802 | 900 | 1802 | 900 | Request for expedited examination of a design application | |

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid SUBTOTAL (3)

(\$1280)

SUBMITTED BY

Complete (if applicable)

Name (Print/Type)

Kevin T. LeMond

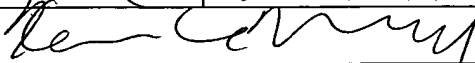
Registration No. (Attorney/Agent)

35,933

Telephone

415-576-0200

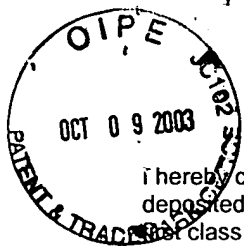
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By

Lata Olivier

PATENT

Attorney Docket No. 002558-060520US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

Kenneth James Pettipiece

Application No.: 09/536,932

Filed: 03/27/2000

For: SPECTRAL IMAGING APPARATUS
AND METHODOLOGY

Examiner: Lew, Hwa S.

Art Unit: 2877

APPELLANT'S BRIEF UNDER 37 CFR
§1.192

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellant hereby submits this Appeal Brief in triplicate pursuant to 37 CFR § 1.192(a). A Notice of Appeal was filed via facsimile on May 5, 2003. Pursuant to 37 CFR § 1.192(a), this Appeal Brief was due on July 5, 2003, extensions of time being permitted. This Appeal Brief is being filed on Monday, October 6, 2003. Accordingly, a three-month extension of time fee is due. If additional fees for extensions of time are due, the Examiner is authorized to charge Deposit Account No. 20-1430.

I. REAL PARTY IN INTEREST:

The real party in interest of the subject application is Bio-Rad Laboratories, the assignee of the present application.

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II. RELATED APPEALS AND INTERFERENCES:

There are no related appeals and interferences.

III. STATUS OF CLAIMS:

Claims 12-13 and 23-26 are pending. Claims 12-13 and 23-26 stand finally rejected. Appellant appeals from the rejection of claims 12-13 and 23-26.

IV. STATUS OF AMENDMENTS:

An amendment was filed subsequent to the final rejection in the Office Action mailed December 3, 2003 ("the final Office Action"). The request for reconsideration was considered, but deemed by the Examiner to not place the application in condition for allowance because, in the Examiner's opinion, the rejected claims remain obvious over the applied references set forth in the final Office Action.

V. SUMMARY OF THE INVENTION:

The present invention provides an improved spectral imaging system that may be used to measure the fluorescence, luminescence, or absorption at selected locations on a sample. The emissions detection subassembly may tune to any wavelength within a continuum of wavelengths utilizing an interferometric spectral discriminator. The interferometric spectral discriminator creates an interferogram of the sample that is superimposed on an image of the sample transmitted by interferometer. An interferometer includes a polarizing beam splitter that preferentially reflects one polarization while preferentially transmitting a second polarization. Thus, one polarization follows one beam path while a second polarization follows a second beam path. The two polarizations are combined at the focus of the output relay lens. The polarizing beam splitter thereby provides enhanced efficiency, while decreasing ghosting within the sample image.

VI. ISSUE PRESENTED:

The issue on appeal is:

Are claims 12-13 and 23-26 obvious in view of U.S. Patent No. 6,007,996 ("McNamara, et al."), U.S. Patent No. 5,539,517 ("Cabib et al.") and U.S. Patent No. 3,822,942 ("Hock")?

VII. GROUPING OF THE CLAIMS:

Appellants submit that the claims that depend on independent claim 12 recite additional features that further distinguish the claimed invention from the prior art. However, for purposes of this appeal, the claims may stand or fall on independent claim 12.

VIII. ARGUMENT

Claims 12-13 and 23-26 are not obvious in view of McNamara et al., Cabib et al. and Hock.

Independent claim 12 has been rejected under § 103(a) as being unpatentable over McNamara in view of Cabib. More specifically, the Examiner indicates that McNamara's Figure 2 describes "a source for illuminating said sample and causing regions in the sample to emit radiation at a second wavelength; an interferometer with a beamsplitter (33); a detector array (37); [and] a processor (28)." As the Examiner correctly points out, McNamara does not show an interferometer having rotating mirrors. The Office Action states, however, that Cabib discloses rotating mirrors that would have been obvious to combine with McNamara to obtain the claimed invention.

Claim 12 recites "a spectral imaging system . . . comprising . . . a source for illuminating said sample . . . ; an interferometer . . . , wherein said interferometer includes: at least two turning mirrors; and one polarizing beam splitter, wherein said polarizing beam splitter preferentially reflects a first polarization and preferentially transmits a second polarization . . . ; a detector array . . . ; and a processor" Nowhere do any of the cited references disclose or suggest the combination set forth in claim 12, whether considered alone or in combination with other cited art. For example, Appellants are unaware of any cited reference that teaches or suggests a polarizing beam splitter preferentially reflecting a first polarization and preferentially transmitting a second polarization. Although McNamara does describe a beamsplitter, McNamara and the other cited references fail to teach or suggest the polarizing beamsplitter set forth in the claimed invention.

The Examiner states that Appellants argue that none of the references cited disclose a spectral imaging system that includes a beamsplitter that reflects a first preferred polarization and substantially transmits a second preferred polarization such that it appears the applicant is arguing that there is no single reference that teaches the combination of a spectral

imaging system having a polarizing beamsplitter. This is correct. The Examiner has not pointed to any reference that includes a polarizing beamsplitter that reflects a first preferred polarization and transmits a second preferred polarization.

The Examiner also goes on to point out that McNamara et al do not show the use of polarized light, in particular, a polarizing beamsplitter, but that Hock shows a Sagnac interferometer in figure 9 wherein the beamsplitter is a polarizing beamsplitter that substantially reflects a first polarization and substantially transmits a second preferred polarization. Appellants respectfully disagree. Hock describes figure 9 in columns 9-10 and no mention is made about the Sagnac interferometer substantially reflecting a first polarization and substantially transmitting a second preferred polarization. Hock simply discloses using the Sagnac interferometer for measuring purposes with contrasting beams. Nothing is mentioned about reflecting a first preferred polarization and transmitting a second preferred polarization.

The Examiner also states that one of ordinary skill in the art would see that the light leaving the interferometer of McNamara is only a partial amount of light that enters the interferometer. The Examiner points out that only 50% of the original light eventually reaches the detector and that Hock teaches that the polarized Sagnac interferometer is "loss-free" and thus, all the light entering the interferometer reaches the detector. The Examiner concludes that therefore one of ordinary skill in the art would have modified the interferometer of McNamara with Hock. However, applicants notes that Cabib, which is of record in the McNamara reference, also mentions Sagnac interferometers (see for example, column 11, lines 32-65). McNamara specifically refers to Cabib in their specification and yet does not incorporate a Sagnac interferometer, as one skilled in the art would do according to the Examiner, into their system. Furthermore, Hock was issued in 1974, and thus, was available to McNamara, especially given McNamara's use of Cabib. Accordingly, it is respectfully submitted that one skilled in the art would not be motivated to combine the cited references to arrive at the present invention even if it were possible.

Accordingly, it is respectfully submitted that McNamara et al., Cabib et al., and Hock, either alone or in combination, fail to teach, disclose, or even suggest a spectral imaging system as recited in claims 12-13 and 23-26. Accordingly, for at least these reasons, it is respectfully submitted these claims are allowable.

CONCLUSION

In view of the foregoing remarks, Appellants respectfully request that the obviousness rejection as to all the pending claims be reversed.

Please deduct the requisite fee, pursuant to 37 CFR § 1.17(c), of \$320 from deposit account 20-1430 and any additional fees associated with this Brief. This Brief is submitted in triplicate.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Kevin T. LeMond', with a long, sweeping flourish extending to the right.

Kevin T. LeMond
Reg. No. 35,933

TOWNSEND and TOWNSEND and CREW LLP
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Claims Appendix

Claims 1-4 withdrawn

Claims 5-11 canceled

12. (Previously presented) A spectral imaging system configured to provide an image of a sample, comprising:

a source for illuminating said sample with radiation within a first band of wavelengths, wherein said first band of wavelengths excites regions within said sample causing said regions to emit radiation within a second band of wavelengths;

an interferometer for spectrally resolving said wavelengths within said second band of wavelengths, wherein said interferometer creates an interferogram of said sample that is superimposed on an image of said sample transmitted by said interferometer, wherein said interferometer includes:

at least two turning mirrors; and

one polarizing beam splitter,

wherein said polarizing beam splitter substantially reflects a first preferred polarization and substantially transmits a second polarization;

a detector array, wherein said sample and said interferogram of said sample are imaged on said detector array, wherein said detector array outputs a plurality of signals corresponding to an intensity at each pixel of said array; and

a processor coupled to said detector array and coupled to a monitor, said processor displaying an image of said sample on said monitor.

13. (Previously presented) The spectral imaging system of claim 12, wherein said polarizing beam splitter is a polarizing cube.

14-22 canceled

23. (Previously presented) The spectral imaging system of claim 12, wherein said first polarization is perpendicular to a plane of incidence (s-polarization).

24. (Previously presented) The spectral imaging system of claim 12 wherein said second polarization is parallel to a plane of incidence (p-polarization).

25. (Previously presented) The spectral imaging system of claim 12, wherein said at least two turning mirrors are configured to turn independently.

26. (Previously presented) The spectral imaging system of claim 12, wherein said at least two turning mirrors are coated with a dielectric to minimize effects upon said first polarization and said second polarization.